

# SEQUENCE LISTING

<110> Rosanne M. Crooke  
Mark J. Graham

<120> ANTISENSE MODULATION OF APOLIPOPROTEIN(A) EXPRESSION

<130> ISPH-0595

<140>

<141>

<160> 41

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 1

tccgtcatcg ctcctcaggg 20

<210> 2

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 2

atgcattctg cccccaagga 20

<210> 3

<211> 13938

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (46)...(13692)

<400> 3

ctgggattgg gacacacttt ctggacactg ctggccagtc ccaaa atg gaa cat aag 57  
Met Glu His Lys  
1

gaa gtg gtt ctt cta ctt ctt tta ttt ctg aaa tca gca gca cct gag 105  
Glu Val Val Leu Leu Leu Leu Phe Leu Lys Ser Ala Ala Pro Glu  
5 10 15 20

caa agc cat gtg gtc cag gat tgc tac cat ggt gat gga cag agt tat 153

Gln	Ser	His	Val	Val	Gln	Asp	Cys	Tyr	His	Gly	Asp	Gly	Gln	Ser	Tyr		
				25					30					35			
cga	ggc	acg	tac	tcc	acc	act	gtc	aca	gga	agg	acc	tgc	caa	gct	tgg	201	
Arg	Gly	Thr	Tyr	Ser	Thr	Thr	Val	Thr	Gly	Arg	Thr	Cys	Gln	Ala	Trp		
			40					45					50				
tca	tct	atg	aca	cca	cat	caa	cat	aat	agg	acc	aca	gaa	aac	tac	cca	249	
Ser	Ser	Met	Thr	Pro	His	Gln	His	Asn	Arg	Thr	Thr	Glu	Asn	Tyr	Pro		
		55					60					65					
aat	gct	ggc	ttg	atc	atg	aac	tac	tgc	agg	aat	cca	gat	gct	gtg	gca	297	
Asn	Ala	Gly	Leu	Ile	Met	Asn	Tyr	Cys	Arg	Asn	Pro	Asp	Ala	Val	Ala		
	70					75					80						
gct	cct	tat	tgt	tat	acg	agg	gat	ccc	ggg	gtc	agg	tgg	gag	tac	tgc	345	
Ala	Pro	Tyr	Cys	Tyr	Thr	Arg	Asp	Pro	Gly	Val	Arg	Trp	Glu	Tyr	Cys		
	85				90					95					100		
aac	ctg	acg	caa	tgc	tca	gac	gca	gaa	ggg	act	gcc	gtc	gcg	cct	ccg	393	
Asn	Leu	Thr	Gln	Cys	Ser	Asp	Ala	Glu	Gly	Thr	Ala	Val	Ala	Pro	Pro		
			105						110					115			
act	gtt	acc	ccg	gtt	cca	agc	cta	gag	gct	cct	tcc	gaa	caa	gca	ccg	441	
Thr	Val	Thr	Pro	Val	Pro	Ser	Leu	Glu	Ala	Pro	Ser	Glu	Gln	Ala	Pro		
			120					125					130				
act	gag	caa	agg	cct	ggg	gtg	cag	gag	tgc	tac	cat	ggg	aat	gga	cag	489	
Thr	Glu	Gln	Arg	Pro	Gly	Val	Gln	Glu	Cys	Tyr	His	Gly	Asn	Gly	Gln		
		135				140						145					
agt	tat	cga	ggc	aca	tac	tcc	acc	act	gtc	aca	gga	aga	acc	tgc	caa	537	
Ser	Tyr	Arg	Gly	Thr	Tyr	Ser	Thr	Thr	Val	Thr	Gly	Arg	Thr	Cys	Gln		
	150					155					160						
gct	tgg	tca	tct	atg	aca	cca	cac	tcg	cat	agt	cgg	acc	cca	gaa	tac	585	
Ala	Trp	Ser	Ser	Met	Thr	Pro	His	Ser	His	Ser	Arg	Thr	Pro	Glu	Tyr		
	165				170					175					180		
tac	cca	aat	gct	ggc	ttg	atc	atg	aac	tac	tgc	agg	aat	cca	gat	gct	633	
Tyr	Pro	Asn	Ala	Gly	Leu	Ile	Met	Asn	Tyr	Cys	Arg	Asn	Pro	Asp	Ala		
				185					190					195			
gtg	gca	gct	cct	tat	tgt	tat	acg	agg	gat	ccc	ggg	gtc	agg	tgg	gag	681	
Val	Ala	Ala	Pro	Tyr	Cys	Tyr	Thr	Arg	Asp	Pro	Gly	Val	Arg	Trp	Glu		
			200					205					210				
tac	tgc	aac	ctg	acg	caa	tgc	tca	gac	gca	gaa	ggg	act	gcc	gtc	gcg	729	
Tyr	Cys	Asn	Leu	Thr	Gln	Cys	Ser	Asp	Ala	Glu	Gly	Thr	Ala	Val	Ala		
		215					220					225					
cct	ccg	act	gtt	acc	ccg	gtt	cca	agc	cta	gag	gct	cct	tcc	gaa	caa	777	
Pro	Pro	Thr	Val	Thr	Pro	Val	Pro	Ser	Leu	Glu	Ala	Pro	Ser	Glu	Gln		
	230					235					240						
gca	ccg	act	gag	caa	agg	cct	ggg	gtg	cag	gag	tgc	tac	cat	ggg	aat	825	
Ala	Pro	Thr	Glu	Gln	Arg	Pro	Gly	Val	Gln	Glu	Cys	Tyr	His	Gly	Asn		

245				250				255				260				
gga Gly	cag Gln	agt Ser	tat Tyr	cga Arg 265	ggc Gly	aca Thr	tac Tyr	tcc Ser	acc Thr 270	act Thr	gtc Val	aca Thr	gga Gly	aga Arg 275	acc Thr	873
tgc Cys	caa Gln	gct Ala	tgg Trp 280	tca Ser	tct Ser	atg Met	aca Thr	cca Pro 285	cac His	tcg Ser	cat His	agt Ser	cgg Arg 290	acc Thr	cca Pro	921
gaa Glu	tac Tyr	tac Tyr 295	cca Pro	aat Asn	gct Ala	ggc Gly	ttg Leu 300	atc Ile	atg Met	aac Asn	tac Tyr	tgc Cys 305	agg Arg	aat Asn	cca Pro	969
gat Asp	gct Ala 310	gtg Val	gca Ala	gct Ala	cct Pro	tat Tyr 315	tgt Cys	tat Tyr	acg Thr	agg Arg	gat Asp 320	ccc Pro	ggt Gly	gtc Val	agg Arg	1017
tgg Trp 325	gag Glu	tac Tyr	tgc Cys	aac Asn	ctg Leu 330	acg Thr	caa Gln	tgc Cys	tca Ser	gac Asp 335	gca Ala	gaa Glu	ggg Gly	act Thr	gcc Ala 340	1065
gtc Val	gcg Ala	cct Pro	ccg Pro	act Thr 345	gtt Val	acc Thr	ccg Pro	gtt Val	cca Pro 350	agc Ser	cta Leu	gag Glu	gct Ala	cct Pro 355	tcc Ser	1113
gaa Glu	caa Gln	gca Ala 360	ccg Pro	act Thr	gag Glu	caa Gln	agg Arg	cct Pro 365	ggg Gly	gtg Val	cag Gln	gag Glu	tgc Cys 370	tac Tyr	cat His	1161
ggg Gly	aat Asn	gga Gly 375	cag Gln	agt Ser	tat Tyr	cga Arg	ggc Gly 380	aca Thr	tac Tyr	tcc Ser	acc Thr	act Thr 385	gtc Val	aca Thr	gga Gly	1209
aga Arg	acc Thr 390	tgc Cys	caa Gln	gct Ala	tgg Trp	tca Ser 395	tct Ser	atg Met	aca Thr	cca Pro	cac His 400	tcg Ser	cat His	agt Ser	cgg Arg	1257
acc Thr 405	cca Pro	gaa Glu	tac Tyr	tac Tyr	cca Pro 410	aat Asn	gct Ala	ggc Gly	ttg Leu 415	atc Ile	atg Met	aac Asn	tac Tyr	tgc Cys	agg Arg 420	1305
aat Asn	cca Pro	gat Asp	gct Ala	gtg Val 425	gca Ala	gct Ala	cct Pro	tat Tyr	tgt Cys 430	tat Tyr	acg Thr	agg Arg	gat Asp	ccc Pro 435	ggt Gly	1353
gtc Val	agg Arg	tgg Trp	gag Glu 440	tac Tyr	tgc Cys	aac Asn	ctg Leu	acg Thr 445	caa Gln	tgc Cys	tca Ser	gac Asp	gca Ala 450	gaa Glu	ggg Gly	1401
act Thr	gcc Ala	gtc Val 455	gcg Ala	cct Pro	ccg Pro	act Thr	gtt Val 460	acc Thr	ccg Pro	gtt Val	cca Pro	agc Ser	cta Leu	gag Glu	gct Ala	1449
cct Pro	tcc Ser 470	gaa Glu	caa Gln	gca Ala	ccg Pro	act Thr 475	gag Glu	caa Gln	agg Arg	cct Pro	ggg Gly 480	gtg Val	cag Gln	gag Glu	tgc Cys	1497

tac cat ggt aat gga cag agt tat cga ggc aca tac tcc acc act gtc	1545
Tyr His Gly Asn Gly Gln Ser Tyr Arg Gly Thr Tyr Ser Thr Val	
485 490 495 500	
aca gga aga acc tgc caa gct tgg tca tct atg aca cca cac tgc cat	1593
Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser Met Thr Pro His Ser His	
505 510 515	
agt cgg acc cca gaa tac tac cca aat gct ggc ttg atc atg aac tac	1641
Ser Arg Thr Pro Glu Tyr Tyr Pro Asn Ala Gly Leu Ile Met Asn Tyr	
520 525 530	
tgc agg aat cca gat gct gtg gca gct cct tat tgt tat acg agg gat	1689
Cys Arg Asn Pro Asp Ala Val Ala Ala Pro Tyr Cys Tyr Thr Arg Asp	
535 540 545	
ccc ggt gtc agg tgg gag tac tgc aac ctg acg caa tgc tca gac gca	1737
Pro Gly Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln Cys Ser Asp Ala	
550 555 560	
gaa ggg act gcc gtc gcg cct ccg act gtt acc ccg gtt cca agc cta	1785
Glu Gly Thr Ala Val Ala Pro Pro Thr Val Thr Pro Val Pro Ser Leu	
565 570 575 580	
gag gct cct tcc gaa caa gca ccg act gag caa agg cct ggg gtg cag	1833
Glu Ala Pro Ser Glu Gln Ala Pro Thr Glu Gln Arg Pro Gly Val Gln	
585 590 595	
gag tgc tac cat ggt aat gga cag agt tat cga ggc aca tac tcc acc	1881
Glu Cys Tyr His Gly Asn Gly Gln Ser Tyr Arg Gly Thr Tyr Ser Thr	
600 605 610	
act gtc aca gga aga acc tgc caa gct tgg tca tct atg aca cca cac	1929
Thr Val Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser Met Thr Pro His	
615 620 625	
tcg cat agt cgg acc cca gaa tac tac cca aat gct ggc ttg atc atg	1977
Ser His Ser Arg Thr Pro Glu Tyr Tyr Pro Asn Ala Gly Leu Ile Met	
630 635 640	
aac tac tgc agg aat cca gat gct gtg gca gct cct tat tgt tat acg	2025
Asn Tyr Cys Arg Asn Pro Asp Ala Val Ala Ala Pro Tyr Cys Tyr Thr	
645 650 655 660	
agg gat ccc ggt gtc agg tgg gag tac tgc aac ctg acg caa tgc tca	2073
Arg Asp Pro Gly Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln Cys Ser	
665 670 675	
gac gca gaa ggg act gcc gtc gcg cct ccg act gtt acc ccg gtt cca	2121
Asp Ala Glu Gly Thr Ala Val Ala Pro Pro Thr Val Thr Pro Val Pro	
680 685 690	
agc cta gag gct cct tcc gaa caa gca ccg act gag caa agg cct ggg	2169
Ser Leu Glu Ala Pro Ser Glu Gln Ala Pro Thr Glu Gln Arg Pro Gly	
695 700 705	

gtg cag gag tgc tac cat ggt aat gga cag agt tat cga ggc aca tac	2217
Val Gln Glu Cys Tyr His Gly Asn Gly Gln Ser Tyr Arg Gly Thr Tyr	
710 715 720	
tcc acc act gtc aca gga aga acc tgc caa gct tgg tca tct atg aca	2265
Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser Met Thr	
725 730 735 740	
cca cac tcg cat agt cgg acc cca gaa tac tac cca aat gct ggc ttg	2313
Pro His Ser His Ser Arg Thr Pro Glu Tyr Tyr Pro Asn Ala Gly Leu	
745 750 755	
atc atg aac tac tgc agg aat cca gat gct gtg gca gct cct tat tgt	2361
Ile Met Asn Tyr Cys Arg Asn Pro Asp Ala Val Ala Ala Pro Tyr Cys	
760 765 770	
tat acg agg gat ccc ggt gtc agg tgg gag tac tgc aac ctg acg caa	2409
Tyr Thr Arg Asp Pro Gly Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln	
775 780 785	
tgc tca gac gca gaa ggg act gcc gtc gcg cct ccg act gtt acc ccg	2457
Cys Ser Asp Ala Glu Gly Thr Ala Val Ala Pro Pro Thr Val Thr Pro	
790 795 800	
gtt cca agc cta gag gct cct tcc gaa caa gca ccg act gag caa agg	2505
Val Pro Ser Leu Glu Ala Pro Ser Glu Gln Ala Pro Thr Glu Gln Arg	
805 810 815 820	
cct ggg gtg cag gag tgc tac cat ggt aat gga cag agt tat cga ggc	2553
Pro Gly Val Gln Glu Cys Tyr His Gly Asn Gly Gln Ser Tyr Arg Gly	
825 830 835	
aca tac tcc acc act gtc aca gga aga acc tgc caa gct tgg tca tct	2601
Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser	
840 845 850	
atg aca cca cac tcg cat agt cgg acc cca gaa tac tac cca aat gct	2649
Met Thr Pro His Ser His Ser Arg Thr Pro Glu Tyr Tyr Pro Asn Ala	
855 860 865	
ggc ttg atc atg aac tac tgc agg aat cca gat gct gtg gca gct cct	2697
Gly Leu Ile Met Asn Tyr Cys Arg Asn Pro Asp Ala Val Ala Ala Pro	
870 875 880	
tat tgt tat acg agg gat ccc ggt gtc agg tgg gag tac tgc aac ctg	2745
Tyr Cys Tyr Thr Arg Asp Pro Gly Val Arg Trp Glu Tyr Cys Asn Leu	
885 890 895 900	
acg caa tgc tca gac gca gaa ggg act gcc gtc gcg cct ccg act gtt	2793
Thr Gln Cys Ser Asp Ala Glu Gly Thr Ala Val Ala Pro Pro Thr Val	
905 910 915	
acc ccg gtt cca agc cta gag gct cct tcc gaa caa gca ccg act gag	2841
Thr Pro Val Pro Ser Leu Glu Ala Pro Ser Glu Gln Ala Pro Thr Glu	
920 925 930	
caa agg cct ggg gtg cag gag tgc tac cat ggt aat gga cag agt tat	2889

Gln	Arg	Pro	Gly	Val	Gln	Glu	Cys	Tyr	His	Gly	Asn	Gly	Gln	Ser	Tyr		
		935					940					945					
cga	ggc	aca	tac	tcc	acc	act	gtc	aca	gga	aga	acc	tgc	caa	gct	tgg	2937	
Arg	Gly	Thr	Tyr	Ser	Thr	Thr	Val	Thr	Gly	Arg	Thr	Cys	Gln	Ala	Trp		
	950					955					960						
tca	tct	atg	aca	cca	cac	tcg	cat	agt	cgg	acc	cca	gaa	tac	tac	cca	2985	
Ser	Ser	Met	Thr	Pro	His	Ser	His	Ser	Arg	Thr	Pro	Glu	Tyr	Tyr	Pro		
965					970					975					980		
aat	gct	ggc	ttg	atc	atg	aac	tac	tgc	agg	aat	cca	gat	gct	gtg	gca	3033	
Asn	Ala	Gly	Leu	Ile	Met	Asn	Tyr	Cys	Arg	Asn	Pro	Asp	Ala	Val	Ala		
				985					990					995			
gct	cct	tat	tgt	tat	acg	agg	gat	ccc	ggg	gtc	agg	tgg	gag	tac	tgc	3081	
Ala	Pro	Tyr	Cys	Tyr	Thr	Arg	Asp	Pro	Gly	Val	Arg	Trp	Glu	Tyr	Cys		
			1000					1005					1010				
aac	ctg	acg	caa	tgc	tca	gac	gca	gaa	ggg	act	gcc	gtc	gcg	cct	ccg	3129	
Asn	Leu	Thr	Gln	Cys	Ser	Asp	Ala	Glu	Gly	Thr	Ala	Val	Ala	Pro	Pro		
			1015				1020					1025					
act	gtt	acc	ccg	gtt	cca	agc	cta	gag	gct	cct	tcc	gaa	caa	gca	ccg	3177	
Thr	Val	Thr	Pro	Val	Pro	Ser	Leu	Glu	Ala	Pro	Ser	Glu	Gln	Ala	Pro		
	1030					1035				1040							
act	gag	caa	agg	cct	ggg	gtg	cag	gag	tgc	tac	cat	ggg	aat	gga	cag	3225	
Thr	Glu	Gln	Arg	Pro	Gly	Val	Gln	Glu	Cys	Tyr	His	Gly	Asn	Gly	Gln		
1045					1050				1055						1060		
agt	tat	cga	ggc	aca	tac	tcc	acc	act	gtc	aca	gga	aga	acc	tgc	caa	3273	
Ser	Tyr	Arg	Gly	Thr	Tyr	Ser	Thr	Thr	Val	Thr	Gly	Arg	Thr	Cys	Gln		
				1065					1070					1075			
gct	tgg	tca	tct	atg	aca	cca	cac	tcg	cat	agt	cgg	acc	cca	gaa	tac	3321	
Ala	Trp	Ser	Ser	Met	Thr	Pro	His	Ser	His	Ser	Arg	Thr	Pro	Glu	Tyr		
				1080				1085					1090				
tac	cca	aat	gct	ggc	ttg	atc	atg	aac	tac	tgc	agg	aat	cca	gat	gct	3369	
Tyr	Pro	Asn	Ala	Gly	Leu	Ile	Met	Asn	Tyr	Cys	Arg	Asn	Pro	Asp	Ala		
		1095					1100					1105					
gtg	gca	gct	cct	tat	tgt	tat	acg	agg	gat	ccc	ggg	gtc	agg	tgg	gag	3417	
Val	Ala	Ala	Pro	Tyr	Cys	Tyr	Thr	Arg	Asp	Pro	Gly	Val	Arg	Trp	Glu		
	1110					1115				1120							
tac	tgc	aac	ctg	acg	caa	tgc	tca	gac	gca	gaa	ggg	act	gcc	gtc	gcg	3465	
Tyr	Cys	Asn	Leu	Thr	Gln	Cys	Ser	Asp	Ala	Glu	Gly	Thr	Ala	Val	Ala		
1125					1130				1135					1140			
cct	ccg	act	gtt	acc	ccg	gtt	cca	agc	cta	gag	gct	cct	tcc	gaa	caa	3513	
Pro	Pro	Thr	Val	Thr	Pro	Val	Pro	Ser	Leu	Glu	Ala	Pro	Ser	Glu	Gln		
				1145				1150					1155				
gca	ccg	act	gag	caa	agg	cct	ggg	gtg	cag	gag	tgc	tac	cat	ggg	aat	3561	
Ala	Pro	Thr	Glu	Gln	Arg	Pro	Gly	Val	Gln	Glu	Cys	Tyr	His	Gly	Asn		

1160	1165	1170	
gga cag agt tat cga ggc aca tac tcc acc act gtc aca gga aga acc Gly Gln Ser Tyr Arg Gly Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr 1175 1180 1185			3609
tgc caa gct tgg tca tct atg aca cca cac tcg cat agt cgg acc cca Cys Gln Ala Trp Ser Ser Met Thr Pro His Ser His Ser Arg Thr Pro 1190 1195 1200			3657
gaa tac tac cca aat gct ggc ttg atc atg aac tac tgc agg aat cca Glu Tyr Tyr Pro Asn Ala Gly Leu Ile Met Asn Tyr Cys Arg Asn Pro 1205 1210 1215 1220			3705
gat gct gtg gca gct cct tat tgt tat acg agg gat ccc ggt gtc agg Asp Ala Val Ala Ala Pro Tyr Cys Tyr Thr Arg Asp Pro Gly Val Arg 1225 1230 1235			3753
tgg gag tac tgc aac ctg acg caa tgc tca gac gca gaa ggg act gcc Trp Glu Tyr Cys Asn Leu Thr Gln Cys Ser Asp Ala Glu Gly Thr Ala 1240 1245 1250			3801
gtc gcg cct ccg act gtt acc ccg gtt cca agc cta gag gct cct tcc Val Ala Pro Pro Thr Val Thr Pro Val Pro Ser Leu Glu Ala Pro Ser 1255 1260 1265			3849
gaa caa gca ccg act gag caa agg cct ggg gtg cag gag tgc tac cat Glu Gln Ala Pro Thr Glu Gln Arg Pro Gly Val Gln Glu Cys Tyr His 1270 1275 1280			3897
ggt aat gga cag agt tat cga ggc aca tac tcc acc act gtc aca gga Gly Asn Gly Gln Ser Tyr Arg Gly Thr Tyr Ser Thr Thr Val Thr Gly 1285 1290 1295 1300			3945
aga acc tgc caa gct tgg tca tct atg aca cca cac tcg cat agt cgg Arg Thr Cys Gln Ala Trp Ser Ser Met Thr Pro His Ser His Ser Arg 1305 1310 1315			3993
acc cca gaa tac tac cca aat gct ggc ttg atc atg aac tac tgc agg Thr Pro Glu Tyr Tyr Pro Asn Ala Gly Leu Ile Met Asn Tyr Cys Arg 1320 1325 1330			4041
aat cca gat gct gtg gca gct cct tat tgt tat acg agg gat ccc ggt Asn Pro Asp Ala Val Ala Ala Pro Tyr Cys Tyr Thr Arg Asp Pro Gly 1335 1340 1345			4089
gtc agg tgg gag tac tgc aac ctg acg caa tgc tca gac gca gaa ggg Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln Cys Ser Asp Ala Glu Gly 1350 1355 1360			4137
act gcc gtc gcg cct ccg act gtt acc ccg gtt cca agc cta gag gct Thr Ala Val Ala Pro Pro Thr Val Thr Pro Val Pro Ser Leu Glu Ala 1365 1370 1375 1380			4185
cct tcc gaa caa gca ccg act gag caa agg cct ggg gtg cag gag tgc Pro Ser Glu Gln Ala Pro Thr Glu Gln Arg Pro Gly Val Gln Glu Cys 1385 1390 1395			4233

tac cat ggt aat gga cag agt tat cga ggc aca tac tcc acc act gtc	4281
Tyr His Gly Asn Gly Gln Ser Tyr Arg Gly Thr Tyr Ser Thr Val	
1400 1405 1410	
aca gga aga acc tgc caa gct tgg tca tct atg aca cca cac tcg cat	4329
Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser Met Thr Pro His Ser His	
1415 1420 1425	
agt cgg acc cca gaa tac tac cca aat gct ggc ttg atc atg aac tac	4377
Ser Arg Thr Pro Glu Tyr Tyr Pro Asn Ala Gly Leu Ile Met Asn Tyr	
1430 1435 1440	
tgc agg aat cca gat gct gtg gca gct cct tat tgt tat acg agg gat	4425
Cys Arg Asn Pro Asp Ala Val Ala Ala Pro Tyr Cys Tyr Thr Arg Asp	
1445 1450 1455 1460	
ccc ggt gtc agg tgg gag tac tgc aac ctg acg caa tgc tca gac gca	4473
Pro Gly Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln Cys Ser Asp Ala	
1465 1470 1475	
gaa ggg act gcc gtc gcg cct ccg act gtt acc ccg gtt cca agc cta	4521
Glu Gly Thr Ala Val Ala Pro Pro Thr Val Thr Pro Val Pro Ser Leu	
1480 1485 1490	
gag gct cct tcc gaa caa gca ccg act gag caa agg cct ggg gtg cag	4569
Glu Ala Pro Ser Glu Gln Ala Pro Thr Glu Gln Arg Pro Gly Val Gln	
1495 1500 1505	
gag tgc tac cat ggt aat gga cag agt tat cga ggc aca tac tcc acc	4617
Glu Cys Tyr His Gly Asn Gly Gln Ser Tyr Arg Gly Thr Tyr Ser Thr	
1510 1515 1520	
act gtc aca gga aga acc tgc caa gct tgg tca tct atg aca cca cac	4665
Thr Val Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser Met Thr Pro His	
1525 1530 1535 1540	
tcg cat agt cgg acc cca gaa tac tac cca aat gct ggc ttg atc atg	4713
Ser His Ser Arg Thr Pro Glu Tyr Tyr Pro Asn Ala Gly Leu Ile Met	
1545 1550 1555	
aac tac tgc agg aat cca gat gct gtg gca gct cct tat tgt tat acg	4761
Asn Tyr Cys Arg Asn Pro Asp Ala Val Ala Ala Pro Tyr Cys Tyr Thr	
1560 1565 1570	
agg gat ccc ggt gtc agg tgg gag tac tgc aac ctg acg caa tgc tca	4809
Arg Asp Pro Gly Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln Cys Ser	
1575 1580 1585	
gac gca gaa ggg act gcc gtc gcg cct ccg act gtt acc ccg gtt cca	4857
Asp Ala Glu Gly Thr Ala Val Ala Pro Pro Thr Val Thr Pro Val Pro	
1590 1595 1600	
agc cta gag gct cct tcc gaa caa gca ccg act gag caa agg cct ggg	4905
Ser Leu Glu Ala Pro Ser Glu Gln Ala Pro Thr Glu Gln Arg Pro Gly	
1605 1610 1615 1620	



gtg cag gag tgc tac cat ggt aat gga cag agt tat cga ggc aca tac	4953
Val Gln Glu Cys Tyr His Gly Asn Gly Gln Ser Tyr Arg Gly Thr Tyr	
1625 1630 1635	
tcc acc act gtc aca gga aga acc tgc caa gct tgg tca tct atg aca	5001
Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser Met Thr	
1640 1645 1650	
cca cac tcg cat agt cgg acc cca gaa tac tac cca aat gct ggc ttg	5049
Pro His Ser His Ser Arg Thr Pro Glu Tyr Tyr Pro Asn Ala Gly Leu	
1655 1660 1665	
atc atg aac tac tgc agg aat cca gat gct gtg gca gct cct tat tgt	5097
Ile Met Asn Tyr Cys Arg Asn Pro Asp Ala Val Ala Ala Pro Tyr Cys	
1670 1675 1680	
tat acg agg gat ccc ggt gtc agg tgg gag tac tgc aac ctg acg caa	5145
Tyr Thr Arg Asp Pro Gly Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln	
1685 1690 1695 1700	
tgc tca gac gca gaa ggg act gcc gtc gcg cct ccg act gtt acc ccg	5193
Cys Ser Asp Ala Glu Gly Thr Ala Val Ala Pro Pro Thr Val Thr Pro	
1705 1710 1715	
gtt cca agc cta gag gct cct tcc gaa caa gca ccg act gag caa agg	5241
Val Pro Ser Leu Glu Ala Pro Ser Glu Gln Ala Pro Thr Glu Gln Arg	
1720 1725 1730	
cct ggg gtg cag gag tgc tac cat ggt aat gga cag agt tat cga ggc	5289
Pro Gly Val Gln Glu Cys Tyr His Gly Asn Gly Gln Ser Tyr Arg Gly	
1735 1740 1745	
aca tac tcc acc act gtc aca gga aga acc tgc caa gct tgg tca tct	5337
Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser	
1750 1755 1760	
atg aca cca cac tcg cat agt cgg acc cca gaa tac tac cca aat gct	5385
Met Thr Pro His Ser His Ser Arg Thr Pro Glu Tyr Tyr Pro Asn Ala	
1765 1770 1775 1780	
ggc ttg atc atg aac tac tgc agg aat cca gat gct gtg gca gct cct	5433
Gly Leu Ile Met Asn Tyr Cys Arg Asn Pro Asp Ala Val Ala Ala Pro	
1785 1790 1795	
tat tgt tat acg agg gat ccc ggt gtc agg tgg gag tac tgc aac ctg	5481
Tyr Cys Tyr Thr Arg Asp Pro Gly Val Arg Trp Glu Tyr Cys Asn Leu	
1800 1805 1810	
acg caa tgc tca gac gca gaa ggg act gcc gtc gcg cct ccg act gtt	5529
Thr Gln Cys Ser Asp Ala Glu Gly Thr Ala Val Ala Pro Pro Thr Val	
1815 1820 1825	
acc ccg gtt cca agc cta gag gct cct tcc gaa caa gca ccg act gag	5577
Thr Pro Val Pro Ser Leu Glu Ala Pro Ser Glu Gln Ala Pro Thr Glu	
1830 1835 1840	
caa agg cct ggg gtg cag gag tgc tac cat ggt aat gga cag agt tat	5625

Gln Arg Pro Gly Val	Gln Glu Cys Tyr His	Gly Asn Gly Gln Ser Tyr	
1845	1850	1855	1860
cga ggc aca tac tcc acc act gtc aca gga aga acc tgc caa gct tgg	5673		
Arg Gly Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ala Trp			
	1865	1870	1875
tca tct atg aca cca cac tcg cat agt cgg acc cca gaa tac tac cca	5721		
Ser Ser Met Thr Pro His Ser His Ser Arg Thr Pro Glu Tyr Tyr Pro			
	1880	1885	1890
aat gct ggc ttg atc atg aac tac tgc agg aat cca gat gct gtg gca	5769		
Asn Ala Gly Leu Ile Met Asn Tyr Cys Arg Asn Pro Asp Ala Val Ala			
	1895	1900	1905
gct cct tat tgt tat acg agg gat ccc ggt gtc agg tgg gag tac tgc	5817		
Ala Pro Tyr Cys Tyr Thr Arg Asp Pro Gly Val Arg Trp Glu Tyr Cys			
	1910	1915	1920
aac ctg acg caa tgc tca gac gca gaa ggg act gcc gtc gcg cct ccg	5865		
Asn Leu Thr Gln Cys Ser Asp Ala Glu Gly Thr Ala Val Ala Pro Pro			
	1925	1930	1935
act gtt acc ccg gtt cca agc cta gag gct cct tcc gaa caa gca ccg	5913		
Thr Val Thr Pro Val Pro Ser Leu Glu Ala Pro Ser Glu Gln Ala Pro			
	1945	1950	1955
act gag caa agg cct ggg gtg cag gag tgc tac cat ggt aat gga cag	5961		
Thr Glu Gln Arg Pro Gly Val Gln Glu Cys Tyr His Gly Asn Gly Gln			
	1960	1965	1970
agt tat cga ggc aca tac tcc acc act gtc aca gga aga acc tgc caa	6009		
Ser Tyr Arg Gly Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr Cys Gln			
	1975	1980	1985
gct tgg tca tct atg aca cca cac tcg cat agt cgg acc cca gaa tac	6057		
Ala Trp Ser Ser Met Thr Pro His Ser His Ser Arg Thr Pro Glu Tyr			
	1990	1995	2000
tac cca aat gct ggc ttg atc atg aac tac tgc agg aat cca gat gct	6105		
Tyr Pro Asn Ala Gly Leu Ile Met Asn Tyr Cys Arg Asn Pro Asp Ala			
	2005	2010	2015
gtg gca gct cct tat tgt tat acg agg gat ccc ggt gtc agg tgg gag	6153		
Val Ala Ala Pro Tyr Cys Tyr Thr Arg Asp Pro Gly Val Arg Trp Glu			
	2025	2030	2035
tac tgc aac ctg acg caa tgc tca gac gca gaa ggg act gcc gtc gcg	6201		
Tyr Cys Asn Leu Thr Gln Cys Ser Asp Ala Glu Gly Thr Ala Val Ala			
	2040	2045	2050
cct ccg act gtt acc ccg gtt cca agc cta gag gct cct tcc gaa caa	6249		
Pro Pro Thr Val Thr Pro Val Pro Ser Leu Glu Ala Pro Ser Glu Gln			
	2055	2060	2065
gca ccg act gag caa agg cct ggg gtg cag gag tgc tac cat ggt aat	6297		
Ala Pro Thr Glu Gln Arg Pro Gly Val Gln Glu Cys Tyr His Gly Asn			

2070	2075	2080	
gga cag agt tat cga ggc aca tac tcc acc act gtc aca gga aga acc Gly Gln Ser Tyr Arg Gly Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr 2085 2090 2095 2100			6345
tgc caa gct tgg tca tct atg aca cca cac tcg cat agt cgg acc cca Cys Gln Ala Trp Ser Ser Met Thr Pro His Ser His Ser Arg Thr Pro 2105 2110 2115			6393
gaa tac tac cca aat gct ggc ttg atc atg aac tac tgc agg aat cca Glu Tyr Tyr Pro Asn Ala Gly Leu Ile Met Asn Tyr Cys Arg Asn Pro 2120 2125 2130			6441
gat gct gtg gca gct cct tat tgt tat acg agg gat ccc ggt gtc agg Asp Ala Val Ala Ala Pro Tyr Cys Tyr Thr Arg Asp Pro Gly Val Arg 2135 2140 2145			6489
tgg gag tac tgc aac ctg acg caa tgc tca gac gca gaa ggg act gcc Trp Glu Tyr Cys Asn Leu Thr Gln Cys Ser Asp Ala Glu Gly Thr Ala 2150 2155 2160			6537
gtc gcg cct ccg act gtt acc ccg gtt cca agc cta gag gct cct tcc Val Ala Pro Pro Thr Val Thr Pro Val Pro Ser Leu Glu Ala Pro Ser 2165 2170 2175 2180			6585
gaa caa gca ccg act gag caa agg cct ggg gtg cag gag tgc tac cat Glu Gln Ala Pro Thr Glu Gln Arg Pro Gly Val Gln Glu Cys Tyr His 2185 2190 2195			6633
ggt aat gga cag agt tat cga ggc aca tac tcc acc act gtc aca gga Gly Asn Gly Gln Ser Tyr Arg Gly Thr Tyr Ser Thr Thr Val Thr Gly 2200 2205 2210			6681
aga acc tgc caa gct tgg tca tct atg aca cca cac tcg cat agt cgg Arg Thr Cys Gln Ala Trp Ser Ser Met Thr Pro His Ser His Ser Arg 2215 2220 2225			6729
acc cca gaa tac tac cca aat gct ggc ttg atc atg aac tac tgc agg Thr Pro Glu Tyr Tyr Pro Asn Ala Gly Leu Ile Met Asn Tyr Cys Arg 2230 2235 2240			6777
aat cca gat gct gtg gca gct cct tat tgt tat acg agg gat ccc ggt Asn Pro Asp Ala Val Ala Ala Pro Tyr Cys Tyr Thr Arg Asp Pro Gly 2245 2250 2255 2260			6825
gtc agg tgg gag tac tgc aac ctg acg caa tgc tca gac gca gaa ggg Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln Cys Ser Asp Ala Glu Gly 2265 2270 2275			6873
act gcc gtc gcg cct ccg act gtt acc ccg gtt cca agc cta gag gct Thr Ala Val Ala Pro Pro Thr Val Thr Pro Val Pro Ser Leu Glu Ala 2280 2285 2290			6921
cct tcc gaa caa gca ccg act gag caa agg cct ggg gtg cag gag tgc Pro Ser Glu Gln Ala Pro Thr Glu Gln Arg Pro Gly Val Gln Glu Cys 2295 2300 2305			6969

tac cat ggt aat gga cag agt tat cga ggc aca tac tcc acc act gtc Tyr His Gly Asn Gly Gln Ser Tyr Arg Gly Thr Tyr Ser Thr Thr Val 2310 2315 2320	7017
aca gga aga acc tgc caa gct tgg tca tct atg aca cca cac tcg cat Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser Met Thr Pro His Ser His 2325 2330 2335 2340	7065
agt cgg acc cca gaa tac tac cca aat gct ggc ttg atc atg aac tac Ser Arg Thr Pro Glu Tyr Tyr Pro Asn Ala Gly Leu Ile Met Asn Tyr 2345 2350 2355	7113
tgc agg aat cca gat gct gtg gca gct cct tat tgt tat acg agg gat Cys Arg Asn Pro Asp Ala Val Ala Ala Pro Tyr Cys Tyr Thr Arg Asp 2360 2365 2370	7161
ccc ggt gtc agg tgg gag tac tgc aac ctg acg caa tgc tca gac gca Pro Gly Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln Cys Ser Asp Ala 2375 2380 2385	7209
gaa ggg act gcc gtc gcg cct ccg act gtt acc ccg gtt cca agc cta Glu Gly Thr Ala Val Ala Pro Pro Thr Val Thr Pro Val Pro Ser Leu 2390 2395 2400	7257
gag gct cct tcc gaa caa gca ccg act gag caa agg cct ggg gtg cag Glu Ala Pro Ser Glu Gln Ala Pro Thr Glu Gln Arg Pro Gly Val Gln 2405 2410 2415 2420	7305
gag tgc tac cat ggt aat gga cag agt tat cga ggc aca tac tcc acc Glu Cys Tyr His Gly Asn Gly Gln Ser Tyr Arg Gly Thr Tyr Ser Thr 2425 2430 2435	7353
act gtc aca gga aga acc tgc caa gct tgg tca tct atg aca cca cac Thr Val Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser Met Thr Pro His 2440 2445 2450	7401
tcg cat agt cgg acc cca gaa tac tac cca aat gct ggc ttg atc atg Ser His Ser Arg Thr Pro Glu Tyr Tyr Pro Asn Ala Gly Leu Ile Met 2455 2460 2465	7449
aac tac tgc agg aat cca gat gct gtg gca gct cct tat tgt tat acg Asn Tyr Cys Arg Asn Pro Asp Ala Val Ala Ala Pro Tyr Cys Tyr Thr 2470 2475 2480	7497
agg gat ccc ggt gtc agg tgg gag tac tgc aac ctg acg caa tgc tca Arg Asp Pro Gly Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln Cys Ser 2485 2490 2495 2500	7545
gac gca gaa ggg act gcc gtc gcg cct ccg act gtt acc ccg gtt cca Asp Ala Glu Gly Thr Ala Val Ala Pro Pro Thr Val Thr Pro Val Pro 2505 2510 2515	7593
agc cta gag gct cct tcc gaa caa gca ccg act gag caa agg cct ggg Ser Leu Glu Ala Pro Ser Glu Gln Ala Pro Thr Glu Gln Arg Pro Gly 2520 2525 2530	7641

gtg cag gag tgc tac cat ggt aat gga cag agt tat cga ggc aca tac	7689
Val Gln Glu Cys Tyr His Gly Asn Gly Gln Ser Tyr Arg Gly Thr Tyr	
2535 2540 2545	
tcc acc act gtc aca gga aga acc tgc caa gct tgg tca tct atg aca	7737
Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser Met Thr	
2550 2555 2560	
cca cac tcg cat agt cgg acc cca gaa tac tac cca aat gct ggc ttg	7785
Pro His Ser His Ser Arg Thr Pro Glu Tyr Tyr Pro Asn Ala Gly Leu	
2565 2570 2575 2580	
atc atg aac tac tgc agg aat cca gat gct gtg gca gct cct tat tgt	7833
Ile Met Asn Tyr Cys Arg Asn Pro Asp Ala Val Ala Ala Pro Tyr Cys	
2585 2590 2595	
tat acg agg gat ccc ggt gtc agg tgg gag tac tgc aac ctg acg caa	7881
Tyr Thr Arg Asp Pro Gly Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln	
2600 2605 2610	
tgc tca gac gca gaa ggg act gcc gtc gcg cct ccg act gtt acc ccg	7929
Cys Ser Asp Ala Glu Gly Thr Ala Val Ala Pro Pro Thr Val Thr Pro	
2615 2620 2625	
gtt cca agc cta gag gct cct tcc gaa caa gca ccg act gag cag agg	7977
Val Pro Ser Leu Glu Ala Pro Ser Glu Gln Ala Pro Thr Glu Gln Arg	
2630 2635 2640	
cct ggg gtg cag gag tgc tac cac ggt aat gga cag agt tat cga ggc	8025
Pro Gly Val Gln Glu Cys Tyr His Gly Asn Gly Gln Ser Tyr Arg Gly	
2645 2650 2655 2660	
aca tac tcc acc act gtc act gga aga acc tgc caa gct tgg tca tct	8073
Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser	
2665 2670 2675	
atg aca cca cac tcg cat agt cgg acc cca gaa tac tac cca aat gct	8121
Met Thr Pro His Ser His Ser Arg Thr Pro Glu Tyr Tyr Pro Asn Ala	
2680 2685 2690	
ggc ttg atc atg aac tac tgc agg aat cca gat gct gtg gca gct cct	8169
Gly Leu Ile Met Asn Tyr Cys Arg Asn Pro Asp Ala Val Ala Ala Pro	
2695 2700 2705	
tat tgt tat acg agg gat ccc ggt gtc agg tgg gag tac tgc aac ctg	8217
Tyr Cys Tyr Thr Arg Asp Pro Gly Val Arg Trp Glu Tyr Cys Asn Leu	
2710 2715 2720	
acg caa tgc tca gac gca gaa ggg act gcc gtc gcg cct ccg act gtt	8265
Thr Gln Cys Ser Asp Ala Glu Gly Thr Ala Val Ala Pro Pro Thr Val	
2725 2730 2735 2740	
acc ccg gtt cca agc cta gag gct cct tcc gaa caa gca ccg act gag	8313
Thr Pro Val Pro Ser Leu Glu Ala Pro Ser Glu Gln Ala Pro Thr Glu	
2745 2750 2755	
caa agg cct ggg gtg cag gag tgc tac cat ggt aat gga cag agt tat	8361

Gln Arg Pro Gly Val Gln Glu Cys Tyr His Gly Asn Gly Gln Ser Tyr	
2760	2765 2770
cga ggc aca tac tcc acc act gtc aca gga aga acc tgc caa gct tgg	8409
Arg Gly Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ala Trp	
2775	2780 2785
tca tct atg aca cca cac tcg cat agt cgg acc cca gaa tac tac cca	8457
Ser Ser Met Thr Pro His Ser His Ser Arg Thr Pro Glu Tyr Tyr Pro	
2790	2795 2800
aat gct ggc ttg atc atg aac tac tgc agg aat cca gat gct gtg gca	8505
Asn Ala Gly Leu Ile Met Asn Tyr Cys Arg Asn Pro Asp Ala Val Ala	
2805	2810 2815 2820
gct cct tat tgt tat acg agg gat ccc ggt gtc agg tgg gag tac tgc	8553
Ala Pro Tyr Cys Tyr Thr Arg Asp Pro Gly Val Arg Trp Glu Tyr Cys	
2825	2830 2835
aac ctg acg caa tgc tca gac gca gaa ggg act gcc gtc gcg cct ccg	8601
Asn Leu Thr Gln Cys Ser Asp Ala Glu Gly Thr Ala Val Ala Pro Pro	
2840	2845 2850
act gtt acc ccg gtt cca agc cta gag gct cct tcc gaa caa gca ccg	8649
Thr Val Thr Pro Val Pro Ser Leu Glu Ala Pro Ser Glu Gln Ala Pro	
2855	2860 2865
act gag caa agg cct ggg gtg cag gag tgc tac cat ggt aat gga cag	8697
Thr Glu Gln Arg Pro Gly Val Gln Glu Cys Tyr His Gly Asn Gly Gln	
2870	2875 2880
agt tat cga ggc aca tac tcc acc act gtc aca gga aga acc tgc caa	8745
Ser Tyr Arg Gly Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr Cys Gln	
2885	2890 2895 2900
gct tgg tca tct atg aca cca cac tcg cat agt cgg acc cca gaa tac	8793
Ala Trp Ser Ser Met Thr Pro His Ser His Ser Arg Thr Pro Glu Tyr	
2905	2910 2915
tac cca aat gct ggc ttg atc atg aac tac tgc agg aat cca gat gct	8841
Tyr Pro Asn Ala Gly Leu Ile Met Asn Tyr Cys Arg Asn Pro Asp Ala	
2920	2925 2930
gtg gca gct cct tat tgt tat acg agg gat ccc ggt gtc agg tgg gag	8889
Val Ala Ala Pro Tyr Cys Tyr Thr Arg Asp Pro Gly Val Arg Trp Glu	
2935	2940 2945
tac tgc aac ctg acg caa tgc tca gac gca gaa ggg act gcc gtc gcg	8937
Tyr Cys Asn Leu Thr Gln Cys Ser Asp Ala Glu Gly Thr Ala Val Ala	
2950	2955 2960
cct ccg act gtt acc ccg gtt cca agc cta gag gct cct tcc gaa caa	8985
Pro Pro Thr Val Thr Pro Val Pro Ser Leu Glu Ala Pro Ser Glu Gln	
2965	2970 2975 2980
gca ccg act gag cag agg cct ggg gtg cag gag tgc tac cac ggt aat	9033
Ala Pro Thr Glu Gln Arg Pro Gly Val Gln Glu Cys Tyr His Gly Asn	

2985										2990										2995										
gga	cag	agt	tat	cga	ggc	aca	tac	tcc	acc	act	gtc	act	gga	aga	acc		9081													
Gly	Gln	Ser	Tyr	Arg	Gly	Thr	Tyr	Ser	Thr	Thr	Val	Thr	Gly	Arg	Thr															
3000					3005					3010																				
tgc	caa	gct	tgg	tca	tct	atg	aca	cca	cac	tcg	cat	agt	cgg	acc	cca		9129													
Cys	Gln	Ala	Trp	Ser	Ser	Met	Thr	Pro	His	Ser	His	Ser	Arg	Thr	Pro															
3015					3020					3025																				
gaa	tac	tac	cca	aat	gct	ggc	ttg	atc	atg	aac	tac	tgc	agg	aat	cca		9177													
Glu	Tyr	Tyr	Pro	Asn	Ala	Gly	Leu	Ile	Met	Asn	Tyr	Cys	Arg	Asn	Pro															
3030					3035					3040																				
gat	gct	gtg	gca	gct	cct	tat	tgt	tat	acg	agg	gat	ccc	ggt	gtc	agg		9225													
Asp	Ala	Val	Ala	Ala	Pro	Tyr	Cys	Tyr	Thr	Arg	Asp	Pro	Gly	Val	Arg															
3045					3050					3055					3060															
tgg	gag	tac	tgc	aac	ctg	acg	caa	tgc	tca	gac	gca	gaa	ggg	act	gcc		9273													
Trp	Glu	Tyr	Cys	Asn	Leu	Thr	Gln	Cys	Ser	Asp	Ala	Glu	Gly	Thr	Ala															
3065					3070					3075																				
gtc	gcg	cct	ccg	act	gtt	acc	ccg	gtt	cca	agc	cta	gag	gct	cct	tcc		9321													
Val	Ala	Pro	Pro	Thr	Val	Thr	Pro	Val	Pro	Ser	Leu	Glu	Ala	Pro	Ser															
3080					3085					3090																				
gaa	caa	gca	ccg	act	gag	cag	agg	cct	ggg	gtg	cag	gag	tgc	tac	cac		9369													
Glu	Gln	Ala	Pro	Thr	Glu	Gln	Arg	Pro	Gly	Val	Gln	Glu	Cys	Tyr	His															
3095					3100					3105																				
ggt	aat	gga	cag	agt	tat	cga	ggc	aca	tac	tcc	acc	act	gtc	act	gga		9417													
Gly	Asn	Gly	Gln	Ser	Tyr	Arg	Gly	Thr	Tyr	Ser	Thr	Thr	Val	Thr	Gly															
3110					3115					3120																				
aga	acc	tgc	caa	gct	tgg	tca	tct	atg	aca	cca	cac	tcg	cat	agt	cgg		9465													
Arg	Thr	Cys	Gln	Ala	Trp	Ser	Ser	Met	Thr	Pro	His	Ser	His	Ser	Arg															
3125					3130					3135					3140															
acc	cca	gaa	tac	tac	cca	aat	gct	ggc	ttg	atc	atg	aac	tac	tgc	agg		9513													
Thr	Pro	Glu	Tyr	Tyr	Pro	Asn	Ala	Gly	Leu	Ile	Met	Asn	Tyr	Cys	Arg															
3145					3150					3155																				
aat	cca	gat	gct	gtg	gca	gct	cct	tat	tgt	tat	acg	agg	gat	ccc	ggt		9561													
Asn	Pro	Asp	Ala	Val	Ala	Ala	Pro	Tyr	Cys	Tyr	Thr	Arg	Asp	Pro	Gly															
3160					3165					3170																				
gtc	agg	tgg	gag	tac	tgc	aac	ctg	acg	caa	tgc	tca	gac	gca	gaa	ggg		9609													
Val	Arg	Trp	Glu	Tyr	Cys	Asn	Leu	Thr	Gln	Cys	Ser	Asp	Ala	Glu	Gly															
3175					3180					3185																				
act	gcc	gtc	gcg	cct	ccg	act	gtt	acc	ccg	gtt	cca	agc	cta	gag	gct		9657													
Thr	Ala	Val	Ala	Pro	Pro	Thr	Val	Thr	Pro	Val	Pro	Ser	Leu	Glu	Ala															
3190					3195					3200																				
cct	tcc	gaa	caa	gca	ccg	act	gag	cag	agg	cct	ggg	gtg	cag	gag	tgc		9705													
Pro	Ser	Glu	Gln	Ala	Pro	Thr	Glu	Gln	Arg	Pro	Gly	Val	Gln	Glu	Cys															
3205					3210					3215					3220															

tac cac ggt aat gga cag agt tat cga ggc aca tac tcc acc act gtc	9753
Tyr His Gly Asn Gly Gln Ser Tyr Arg Gly Thr Tyr Ser Thr Thr Val	
3225 3230 3235	
act gga aga acc tgc caa gct tgg tca tct atg aca cca cac tcg cat	9801
Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser Met Thr Pro His Ser His	
3240 3245 3250	
agt cgg acc cca gaa tac tac cca aat gct ggc ttg atc atg aac tac	9849
Ser Arg Thr Pro Glu Tyr Tyr Pro Asn Ala Gly Leu Ile Met Asn Tyr	
3255 3260 3265	
tgc agg aat cca gat gct gtg gca gct cct tat tgt tat acg agg gat	9897
Cys Arg Asn Pro Asp Ala Val Ala Ala Pro Tyr Cys Tyr Thr Arg Asp	
3270 3275 3280	
ccc ggt gtc agg tgg gag tac tgc aac ctg acg caa tgc tca gac gca	9945
Pro Gly Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln Cys Ser Asp Ala	
3285 3290 3295 3300	
gaa ggg act gcc gtc gcg cct ccg act gtt acc ccg gtt cca agc cta	9993
Glu Gly Thr Ala Val Ala Pro Pro Thr Val Thr Pro Val Pro Ser Leu	
3305 3310 3315	
gag gct cct tcc gaa caa gca ccg act gag cag agg cct ggg gtg cag	10041
Glu Ala Pro Ser Glu Gln Ala Pro Thr Glu Gln Arg Pro Gly Val Gln	
3320 3325 3330	
gag tgc tac cac ggt aat gga cag agt tat cga ggc aca tac tcc acc	10089
Glu Cys Tyr His Gly Asn Gly Gln Ser Tyr Arg Gly Thr Tyr Ser Thr	
3335 3340 3345	
act gtc act gga aga acc tgc caa gct tgg tca tct atg aca cca cac	10137
Thr Val Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser Met Thr Pro His	
3350 3355 3360	
tcg cat agt cgg acc cca gaa tac tac cca aat gct ggc ttg atc atg	10185
Ser His Ser Arg Thr Pro Glu Tyr Tyr Pro Asn Ala Gly Leu Ile Met	
3365 3370 3375 3380	
aac tac tgc agg aat cca gat cct gtg gca gcc cct tat tgt tat acg	10233
Asn Tyr Cys Arg Asn Pro Asp Pro Val Ala Ala Pro Tyr Cys Tyr Thr	
3385 3390 3395	
agg gat ccc agt gtc agg tgg gag tac tgc aac ctg aca caa tgc tca	10281
Arg Asp Pro Ser Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln Cys Ser	
3400 3405 3410	
gac gca gaa ggg act gcc gtc gcg cct cca act att acc ccg att cca	10329
Asp Ala Glu Gly Thr Ala Val Ala Pro Pro Thr Ile Thr Pro Ile Pro	
3415 3420 3425	
agc cta gag gct cct tct gaa caa gca cca act gag caa agg cct ggg	10377
Ser Leu Glu Ala Pro Ser Glu Gln Ala Pro Thr Glu Gln Arg Pro Gly	
3430 3435 3440	



gtg cag gag tgc tac cac gga aat gga cag agt tat caa ggc aca tac	10425
Val Gln Glu Cys Tyr His Gly Asn Gly Gln Ser Tyr Gln Gly Thr Tyr	
3445 3450 3455 3460	
ttc att act gtc aca gga aga acc tgc caa gct tgg tca tct atg aca	10473
Phe Ile Thr Val Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser Met Thr	
3465 3470 3475	
cca cac tcg cat agt cgg acc cca gca tac tac cca aat gct ggc ttg	10521
Pro His Ser His Ser Arg Thr Pro Ala Tyr Tyr Pro Asn Ala Gly Leu	
3480 3485 3490	
atc aag aac tac tgc cga aat cca gat cct gtg gca gcc cct tgg tgt	10569
Ile Lys Asn Tyr Cys Arg Asn Pro Asp Pro Val Ala Ala Pro Trp Cys	
3495 3500 3505	
tat aca aca gat ccc agt gtc agg tgg gag tac tgc aac ctg aca cga	10617
Tyr Thr Thr Asp Pro Ser Val Arg Trp Glu Tyr Cys Asn Leu Thr Arg	
3510 3515 3520	
tgc tca gat gca gaa tgg act gcc ttc gtc cct ccg aat gtt att ctg	10665
Cys Ser Asp Ala Glu Trp Thr Ala Phe Val Pro Pro Asn Val Ile Leu	
3525 3530 3535 3540	
gct cca agc cta gag gct ttt ttt gaa caa gca ctg act gag gaa acc	10713
Ala Pro Ser Leu Glu Ala Phe Phe Glu Gln Ala Leu Thr Glu Glu Thr	
3545 3550 3555	
ccc ggg gta cag gac tgc tac tac cat tat gga cag agt tac cga ggc	10761
Pro Gly Val Gln Asp Cys Tyr Tyr His Tyr Gly Gln Ser Tyr Arg Gly	
3560 3565 3570	
aca tac tcc acc act gtc aca gga aga act tgc caa gct tgg tca tct	10809
Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser	
3575 3580 3585	
atg aca cca cac cag cat agt cgg acc cca gaa aac tac cca aat gct	10857
Met Thr Pro His Gln His Ser Arg Thr Pro Glu Asn Tyr Pro Asn Ala	
3590 3595 3600	
ggc ctg acc agg aac tac tgc agg aat cca gat gct gag att cgc cct	10905
Gly Leu Thr Arg Asn Tyr Cys Arg Asn Pro Asp Ala Glu Ile Arg Pro	
3605 3610 3615 3620	
tgg tgt tac acc atg gat ccc agt gtc agg tgg gag tac tgc aac ctg	10953
Trp Cys Tyr Thr Met Asp Pro Ser Val Arg Trp Glu Tyr Cys Asn Leu	
3625 3630 3635	
aca caa tgc ctg gtg aca gaa tca agt gtc ctt gca act ctc acg gtg	11001
Thr Gln Cys Leu Val Thr Glu Ser Ser Val Leu Ala Thr Leu Thr Val	
3640 3645 3650	
gtc cca gat cca agc aca gag gct tct tct gaa gaa gca cca acg gag	11049
Val Pro Asp Pro Ser Thr Glu Ala Ser Ser Glu Glu Ala Pro Thr Glu	
3655 3660 3665	
caa agc ccc ggg gtc cag gat tgc tac cat ggt gat gga cag agt tat	11097

Gln Ser Pro Gly Val Gln Asp Cys Tyr His Gly Asp Gly Gln Ser Tyr	
3670 3675 3680	
cga ggc tca ttc tct acc act gtc aca gga agg aca tgt cag tct tgg	11145
Arg Gly Ser Phe Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ser Trp	
3685 3690 3695 3700	
tcc tct atg aca cca cac tgg cat cag agg aca aca gaa tat tat cca	11193
Ser Ser Met Thr Pro His Trp His Gln Arg Thr Thr Glu Tyr Tyr Pro	
3705 3710 3715	
aat ggt ggc ctg acc agg aac tac tgc agg aat cca gat gct gag att	11241
Asn Gly Gly Leu Thr Arg Asn Tyr Cys Arg Asn Pro Asp Ala Glu Ile	
3720 3725 3730	
agt cct tgg tgt tat acc atg gat ccc aat gtc aga tgg gag tac tgc	11289
Ser Pro Trp Cys Tyr Thr Met Asp Pro Asn Val Arg Trp Glu Tyr Cys	
3735 3740 3745	
aac ctg aca caa tgt cca gtg aca gaa tca agt gtc ctt gcg acg tcc	11337
Asn Leu Thr Gln Cys Pro Val Thr Glu Ser Ser Val Leu Ala Thr Ser	
3750 3755 3760	
acg gct gtt tct gaa caa gca cca acg gag caa agc ccc aca gtc cag	11385
Thr Ala Val Ser Glu Gln Ala Pro Thr Glu Gln Ser Pro Thr Val Gln	
3765 3770 3775 3780	
gac tgc tac cat ggt gat gga cag agt tat cga ggc tca ttc tcc acc	11433
Asp Cys Tyr His Gly Asp Gly Gln Ser Tyr Arg Gly Ser Phe Ser Thr	
3785 3790 3795	
act gtt aca gga agg aca tgt cag tct tgg tcc tct atg aca cca cac	11481
Thr Val Thr Gly Arg Thr Cys Gln Ser Trp Ser Ser Met Thr Pro His	
3800 3805 3810	
tgg cat cag aga acc aca gaa tac tac cca aat ggt ggc ctg acc agg	11529
Trp His Gln Arg Thr Thr Glu Tyr Tyr Pro Asn Gly Gly Leu Thr Arg	
3815 3820 3825	
aac tac tgc agg aat cca gat gct gag att cgc cct tgg tgt tat acc	11577
Asn Tyr Cys Arg Asn Pro Asp Ala Glu Ile Arg Pro Trp Cys Tyr Thr	
3830 3835 3840	
atg gat ccc agt gtc aga tgg gag tac tgc aac ctg acg caa tgt cca	11625
Met Asp Pro Ser Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln Cys Pro	
3845 3850 3855 3860	
gtg atg gaa tca act ctc ctc aca act ccc acg gtg gtc cca gtt cca	11673
Val Met Glu Ser Thr Leu Leu Thr Thr Pro Thr Val Val Pro Val Pro	
3865 3870 3875	
agc aca gag ctt cct tct gaa gaa gca cca act gaa aac agc act ggg	11721
Ser Thr Glu Leu Pro Ser Glu Glu Ala Pro Thr Glu Asn Ser Thr Gly	
3880 3885 3890	
gtc cag gac tgc tac cga ggt gat gga cag agt tat cga ggc aca ctc	11769
Val Gln Asp Cys Tyr Arg Gly Asp Gly Gln Ser Tyr Arg Gly Thr Leu	

3895					3900					3905						
tcc	acc	act	atc	aca	gga	aga	aca	tgt	cag	tct	tgg	tcg	tct	atg	aca	11817
Ser	Thr	Thr	Ile	Thr	Gly	Arg	Thr	Cys	Gln	Ser	Trp	Ser	Ser	Met	Thr	
3910					3915					3920						
cca	cat	tgg	cat	cgg	agg	atc	cca	tta	tac	tat	cca	aat	gct	ggc	ctg	11865
Pro	His	Trp	His	Arg	Arg	Ile	Pro	Leu	Tyr	Tyr	Pro	Asn	Ala	Gly	Leu	
3925					3930					3935					3940	
acc	agg	aac	tac	tgc	agg	aat	cca	gat	gct	gag	att	cgc	cct	tgg	tgt	11913
Thr	Arg	Asn	Tyr	Cys	Arg	Asn	Pro	Asp	Ala	Glu	Ile	Arg	Pro	Trp	Cys	
3945					3950					3955						
tac	acc	atg	gat	ccc	agt	gtc	agg	tgg	gag	tac	tgc	aac	ctg	aca	cga	11961
Tyr	Thr	Met	Asp	Pro	Ser	Val	Arg	Trp	Glu	Tyr	Cys	Asn	Leu	Thr	Arg	
3960					3965					3970						
tgt	cca	gtg	aca	gaa	tcg	agt	gtc	ctc	aca	act	ccc	aca	gtg	gcc	ccg	12009
Cys	Pro	Val	Thr	Glu	Ser	Ser	Val	Leu	Thr	Thr	Pro	Thr	Val	Ala	Pro	
3975					3980					3985						
gtt	cca	agc	aca	gag	gct	cct	tct	gaa	caa	gca	cca	cct	gag	aaa	agc	12057
Val	Pro	Ser	Thr	Glu	Ala	Pro	Ser	Glu	Gln	Ala	Pro	Pro	Glu	Lys	Ser	
3990					3995					4000						
cct	gtg	gtc	cag	gat	tgc	tac	cat	ggc	gat	gga	cgg	agt	tat	cga	ggc	12105
Pro	Val	Val	Gln	Asp	Cys	Tyr	His	Gly	Asp	Gly	Arg	Ser	Tyr	Arg	Gly	
4005					4010					4015					4020	
ata	tcc	tcc	acc	act	gtc	aca	gga	agg	acc	tgt	caa	tct	tgg	tca	tct	12153
Ile	Ser	Ser	Thr	Thr	Val	Thr	Gly	Arg	Thr	Cys	Gln	Ser	Trp	Ser	Ser	
4025					4030					4035						
atg	ata	cca	cac	tgg	cat	cag	agg	acc	cca	gaa	aac	tac	cca	aat	gct	12201
Met	Ile	Pro	His	Trp	His	Gln	Arg	Thr	Pro	Glu	Asn	Tyr	Pro	Asn	Ala	
4040					4045					4050						
ggc	ctg	acc	gag	aac	tac	tgc	agg	aat	cca	gat	tct	ggg	aaa	caa	ccc	12249
Gly	Leu	Thr	Glu	Asn	Tyr	Cys	Arg	Asn	Pro	Asp	Ser	Gly	Lys	Gln	Pro	
4055					4060					4065						
tgg	tgt	tac	aca	acc	gat	ccg	tgt	gtg	agg	tgg	gag	tac	tgc	aat	ctg	12297
Trp	Cys	Tyr	Thr	Thr	Asp	Pro	Cys	Val	Arg	Trp	Glu	Tyr	Cys	Asn	Leu	
4070					4075					4080						
aca	caa	tgc	tca	gaa	aca	gaa	tca	ggc	gtc	cta	gag	act	ccc	act	gtt	12345
Thr	Gln	Cys	Ser	Glu	Thr	Glu	Ser	Gly	Val	Leu	Glu	Thr	Pro	Thr	Val	
4085					4090					4095					4100	
gtt	cca	gtt	cca	agc	atg	gag	gct	cat	tct	gaa	gca	gca	cca	act	gag	12393
Val	Pro	Val	Pro	Ser	Met	Glu	Ala	His	Ser	Glu	Ala	Ala	Pro	Thr	Glu	
4105					4110					4115						
caa	acc	cct	gtg	gtc	cgg	cag	tgc	tac	cat	ggc	aat	ggc	cag	agt	tat	12441
Gln	Thr	Pro	Val	Val	Arg	Gln	Cys	Tyr	His	Gly	Asn	Gly	Gln	Ser	Tyr	
4120					4125					4130						

cga ggc aca ttc tcc acc act gtc aca gga agg aca tgt caa tct tgg	12489
Arg Gly Thr Phe Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ser Trp	
4135 4140 4145	
tca tcc atg aca cca cac cgg cat cag agg acc cca gaa aac tac cca	12537
Ser Ser Met Thr Pro His Arg His Gln Arg Thr Pro Glu Asn Tyr Pro	
4150 4155 4160	
aat gat ggc ctg aca atg aac tac tgc agg aat cca gat gcc gat aca	12585
Asn Asp Gly Leu Thr Met Asn Tyr Cys Arg Asn Pro Asp Ala Asp Thr	
4165 4170 4175 4180	
ggc cct tgg tgt ttt acc atg gac ccc agc atc agg tgg gag tac tgc	12633
Gly Pro Trp Cys Phe Thr Met Asp Pro Ser Ile Arg Trp Glu Tyr Cys	
4185 4190 4195	
aac ctg acg cga tgc tca gac aca gaa ggg act gtg gtc gct cct ccg	12681
Asn Leu Thr Arg Cys Ser Asp Thr Glu Gly Thr Val Val Ala Pro Pro	
4200 4205 4210	
act gtc atc cag gtt cca agc cta ggg cct cct tct gaa caa gac tgt	12729
Thr Val Ile Gln Val Pro Ser Leu Gly Pro Pro Ser Glu Gln Asp Cys	
4215 4220 4225	
atg ttt ggg aat ggg aaa gga tac cgg ggc aag aag gca acc act gtt	12777
Met Phe Gly Asn Gly Lys Gly Tyr Arg Gly Lys Lys Ala Thr Thr Val	
4230 4235 4240	
act ggg acg cca tgc cag gaa tgg gct gcc cag gag ccc cat aga cac	12825
Thr Gly Thr Pro Cys Gln Glu Trp Ala Ala Gln Glu Pro His Arg His	
4245 4250 4255 4260	
agc acg ttc att cca ggg aca aat aaa tgg gca ggt ctg gaa aaa aat	12873
Ser Thr Phe Ile Pro Gly Thr Asn Lys Trp Ala Gly Leu Glu Lys Asn	
4265 4270 4275	
tac tgc cgt aac cct gat ggt gac atc aat ggt ccc tgg tgc tac aca	12921
Tyr Cys Arg Asn Pro Asp Gly Asp Ile Asn Gly Pro Trp Cys Tyr Thr	
4280 4285 4290	
atg aat cca aga aaa ctt ttt gac tac tgt gat atc cct ctc tgt gca	12969
Met Asn Pro Arg Lys Leu Phe Asp Tyr Cys Asp Ile Pro Leu Cys Ala	
4295 4300 4305	
tcc tct tca ttt gat tgt ggg aag cct caa gtg gag ccg aag aaa tgt	13017
Ser Ser Ser Phe Asp Cys Gly Lys Pro Gln Val Glu Pro Lys Lys Cys	
4310 4315 4320	
cct gga agc att gta ggg ggg tgt gtg gcc cac cca cat tcc tgg ccc	13065
Pro Gly Ser Ile Val Gly Gly Cys Val Ala His Pro His Ser Trp Pro	
4325 4330 4335 4340	
tgg caa gtc agt ctc aga aca agg ttt gga aag cac ttc tgt gga ggc	13113
Trp Gln Val Ser Leu Arg Thr Arg Phe Gly Lys His Phe Cys Gly Gly	
4345 4350 4355	

acc	tta	ata	tcc	cca	gag	tgg	gtg	ctg	act	gct	gct	cac	tgc	ttg	aag	13161	
Thr	Leu	Ile	Ser	Pro	Glu	Trp	Val	Leu	Thr	Ala	Ala	His	Cys	Leu	Lys		
			4360						4365			4370					
aag	tcc	tca	agg	cct	tca	tcc	tac	aag	gtc	atc	ctg	ggg	gca	cac	caa	13209	
Lys	Ser	Ser	Arg	Pro	Ser	Ser	Tyr	Lys	Val	Ile	Leu	Gly	Ala	His	Gln		
			4375						4380			4385					
gaa	gtg	aac	ctc	gaa	tct	cat	gtt	cag	gaa	ata	gaa	gtg	tct	agg	ctg	13257	
Glu	Val	Asn	Leu	Glu	Ser	His	Val	Gln	Glu	Ile	Glu	Val	Ser	Arg	Leu		
			4390						4395			4400					
ttc	ttg	gag	ccc	aca	caa	gca	gat	att	gcc	ttg	cta	aag	cta	agc	agg	13305	
Phe	Leu	Glu	Pro	Thr	Gln	Ala	Asp	Ile	Ala	Leu	Leu	Lys	Leu	Ser	Arg		
4405						4410						4415			4420		
cct	gcc	gtc	atc	act	gac	aaa	gta	atg	cca	gct	tgt	ctg	cca	tcc	cca	13353	
Pro	Ala	Val	Ile	Thr	Asp	Lys	Val	Met	Pro	Ala	Cys	Leu	Pro	Ser	Pro		
			4425						4430						4435		
gac	tac	atg	gtc	acc	gcc	agg	act	gaa	tgt	tac	atc	act	ggc	tgg	gga	13401	
Asp	Tyr	Met	Val	Thr	Ala	Arg	Thr	Glu	Cys	Tyr	Ile	Thr	Gly	Trp	Gly		
			4440						4445						4450		
gaa	acc	caa	ggg	acc	ttt	ggg	act	ggc	ctt	ctc	aag	gaa	gcc	cag	ctc	13449	
Glu	Thr	Gln	Gly	Thr	Phe	Gly	Thr	Gly	Leu	Leu	Lys	Glu	Ala	Gln	Leu		
			4455						4460						4465		
ctt	gtt	att	gag	aat	gaa	gtg	tgc	aat	cac	tat	aag	tat	att	tgt	gct	13497	
Leu	Val	Ile	Glu	Asn	Glu	Val	Cys	Asn	His	Tyr	Lys	Tyr	Ile	Cys	Ala		
			4470						4475						4480		
gag	cat	ttg	gcc	aga	ggc	act	gac	agt	tgc	cag	ggg	gac	agt	gga	ggg	13545	
Glu	His	Leu	Ala	Arg	Gly	Thr	Asp	Ser	Cys	Gln	Gly	Asp	Ser	Gly	Gly		
4485						4490						4495			4500		
cct	ctg	gtt	tgc	ttc	gag	aag	gac	aaa	tac	att	tta	caa	gga	gtc	act	13593	
Pro	Leu	Val	Cys	Phe	Glu	Lys	Asp	Lys	Tyr	Ile	Leu	Gln	Gly	Val	Thr		
			4505						4510						4515		
tct	tgg	ggg	ctt	ggc	tgt	gca	cgc	ccc	aat	aag	cct	ggg	gtc	tat	gct	13641	
Ser	Trp	Gly	Leu	Gly	Cys	Ala	Arg	Pro	Asn	Lys	Pro	Gly	Val	Tyr	Ala		
			4520						4525						4530		
cgt	gtt	tca	agg	ttt	gtt	act	tgg	att	gag	gga	atg	atg	aga	aat	aat	13689	
Arg	Val	Ser	Arg	Phe	Val	Thr	Trp	Ile	Glu	Gly	Met	Met	Arg	Asn	Asn		
			4535						4540						4545		
taa ttggacggga gacagagtga agcatcaacc tacttagaag ctgaaacgtg																13742	
ggtaaggatt tagcatgctg gaaataatag acagcaatca aacgaagaca ctgttcccag																13802	
ctaccagcta tgccaaacct tggcattttt ggtatttttg tgtataagct ttttaaggtct																13862	
gactgacaaa ttctgtatta aggtgtcata gctatgacat ttgttaaaaa taaactctgc																13922	
acttattttt attttga																13938	

```
<210> 4
<211> 19
```

<212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> PCR Primer  
  
 <400> 4  
 gaaggtgaag gtcggagtc 19  
  
 <210> 5  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> PCR Primer  
  
 <400> 5  
 gaagatggtg atgggatttc 20  
  
 <210> 6  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> PCR Probe  
  
 <400> 6  
 caagcttccc gttctcagcc 20  
  
 <210> 7  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Antisense Oligonucleotide  
  
 <400> 7  
 ggcaggtcct tctgtgaca 20  
  
 <210> 8  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Antisense Oligonucleotide  
  
 <400> 8  
 tctgcgtctg agcattgcgt 20  
  
 <210> 9  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Antisense Oligonucleotide  
  
 <400> 9  
 aagcttggca ggttcttcct 20  
  
 <210> 10  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Antisense Oligonucleotide  
  
 <400> 10  
 tcggaggcgc gacggcagtc 20  
  
 <210> 11  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Antisense Oligonucleotide  
  
 <400> 11  
 cggaggcgcg acggcagtcc 20  
  
 <210> 12  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Antisense Oligonucleotide  
  
 <400> 12  
 ggcaggttct tcctgtgaca 20  
  
 <210> 13  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Antisense Oligonucleotide  
  
 <400> 13  
 ataacaataa ggagctgcca 20  
  
 <210> 14  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>

<223> Antisense Oligonucleotide

<400> 14

gaccaagctt ggcaggttct

20

<210> 15

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 15

taacaataag gagctgccac

20

<210> 16

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 16

tgaccaagct tggcaggttc

20

<210> 17

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 17

ttctgcgtct gagcattgcg

20

<210> 18

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 18

aacaataagg agctgccaca

20

<210> 19

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide



<400> 19	
acctgacacc gggatccctc	20
<210> 20	
<211> 20	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Antisense Oligonucleotide	
<400> 20	
ctgagcattg cgtcagggtg	20
<210> 21	
<211> 20	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Antisense Oligonucleotide	
<400> 21	
agtagttcat gatcaagcca	20
<210> 22	
<211> 20	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Antisense Oligonucleotide	
<400> 22	
gacggcagtc ccttctgcgt	20
<210> 23	
<211> 20	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Antisense Oligonucleotide	
<400> 23	
ggcaggttct tccagtgaca	20
<210> 24	
<211> 20	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Antisense Oligonucleotide	
<400> 24	
tgaccaagct tggcaagttc	20

<210> 25  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Antisense Oligonucleotide

<400> 25  
 tataacacca aggactaatc 20

<210> 26  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Antisense Oligonucleotide

<400> 26  
 ccatctgaca ttgggatcca 20

<210> 27  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Antisense Oligonucleotide

<400> 27  
 tgtggtgtca tagaggacca 20

<210> 28  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Antisense Oligonucleotide

<400> 28  
 atgggatcct ccgatgccaa 20

<210> 29  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Antisense Oligonucleotide

<400> 29  
 acaccaaggg cgaatctcag 20

<210> 30

<211> 20  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Antisense Oligonucleotide  
  
 <400> 30  
 ttctgtcact ggacatcggtg 20  
  
 <210> 31  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Antisense Oligonucleotide  
  
 <400> 31  
 cacacggatc ggttgtgtaa 20  
  
 <210> 32  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Antisense Oligonucleotide  
  
 <400> 32  
 acatgtcctt cctgtgacag 20  
  
 <210> 33  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Antisense Oligonucleotide  
  
 <400> 33  
 cagaaggagg ccctaggctt 20  
  
 <210> 34  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Antisense Oligonucleotide  
  
 <400> 34  
 ctggcgggtga ccatgtagtc 20  
  
 <210> 35  
 <211> 20  
 <212> DNA

09923515-080701

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 35

tctaagtagg ttgatgcttc

20

<210> 36

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 36

tccttaccga cgtttcagct

20

<210> 37

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 37

ggaacagtgt cttcgtttga

20

<210> 38

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 38

gtttggcata gctggttagct

20

<210> 39

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 39

accttaaaaag cttatacaca

20

<210> 40

<211> 20

<212> DNA

<213> Artificial Sequence

<220>  
<223> Antisense Oligonucleotide

<400> 40  
atacagaatt tgtcagtcag 20

<210> 41  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense Oligonucleotide

<400> 41  
gtcatagcta tgacacctta 20

092315.080701